



SIX COMMON POLLUTANTS

To protect public health and the environment, EPA has established, and regularly reviews, national air quality standards for six common air pollutants also known as “criteria” pollutants: ground-level ozone, particle pollution ($PM_{2.5}$ and PM_{10}), lead, nitrogen dioxide (NO_2), carbon monoxide (CO), and sulfur dioxide (SO_2).

TRENDS IN NATIONAL AIR QUALITY CONCENTRATIONS

Air quality is measured by monitors located across the country. Monitored levels of the six common pollutants show improvement since the Clean Air Act was amended in 1990. Figure 4 shows national trends between 1990 and 2007 in the common pollutants relative to their air quality standards. Most pollutants show a steady decline throughout the time period. Lead declined in the 1990s as control programs were implemented to lower concentrations in areas above

the national standard. In general, lead concentrations have remained low since 2002. Large year-to-year changes shown in lead concentrations reflect the influence of emissions changes due to operating schedules or other facility activities, such as plant closings, on measurements at nearby monitors. Ozone and $PM_{2.5}$ trends are not smooth and show year-to-year influences of weather conditions which contribute to their formation, dispersion, and removal from the air. Ozone was generally level in the 1990s, and showed a notable decline after 2002 mostly due to oxides of nitrogen (NO_x) emission reductions in the East.

Many areas still have air quality problems caused by one or more pollutant. Ozone and particle pollution continue to present air quality challenges throughout much of the U.S., with many monitors measuring concentrations above, or close to, national air quality standards.

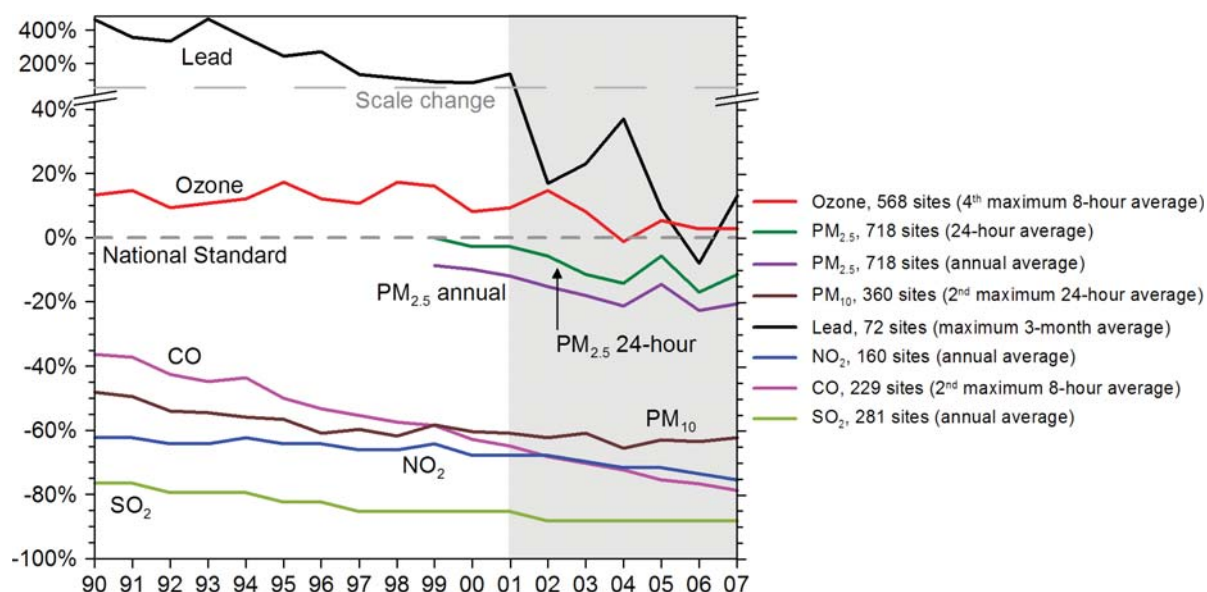


Figure 4. Comparison of national levels of the six common pollutants to national ambient air quality standards, 1990-2007. National levels are averages across all sites with complete data for the time period.

Note: Air quality data for $PM_{2.5}$ start in 1999. Trends from 2001 through 2007 (using the larger number of monitors operating since 2001) are the focus of graphics in the following sections.



Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws. EPA's Office of Air and Radiation (OAR) is committed to promoting and supporting environmental justice. For more information about EPA OAR's environmental justice program and air issues, visit <http://www.epa.gov/air/ej/>.

TRENDS IN “UNHEALTHY” AIR QUALITY DAYS

The Air Quality Index (AQI) relates daily air pollution concentrations for ozone, particles, NO₂, CO, and SO₂ to health concerns for the general public. A value of 100 generally corresponds to the national air quality standard for each pollutant. Values below 100 are generally thought of as satisfactory. Values above 100 are considered to be unhealthy—at first for certain sensitive groups of people, then for everyone as the AQI values increase.

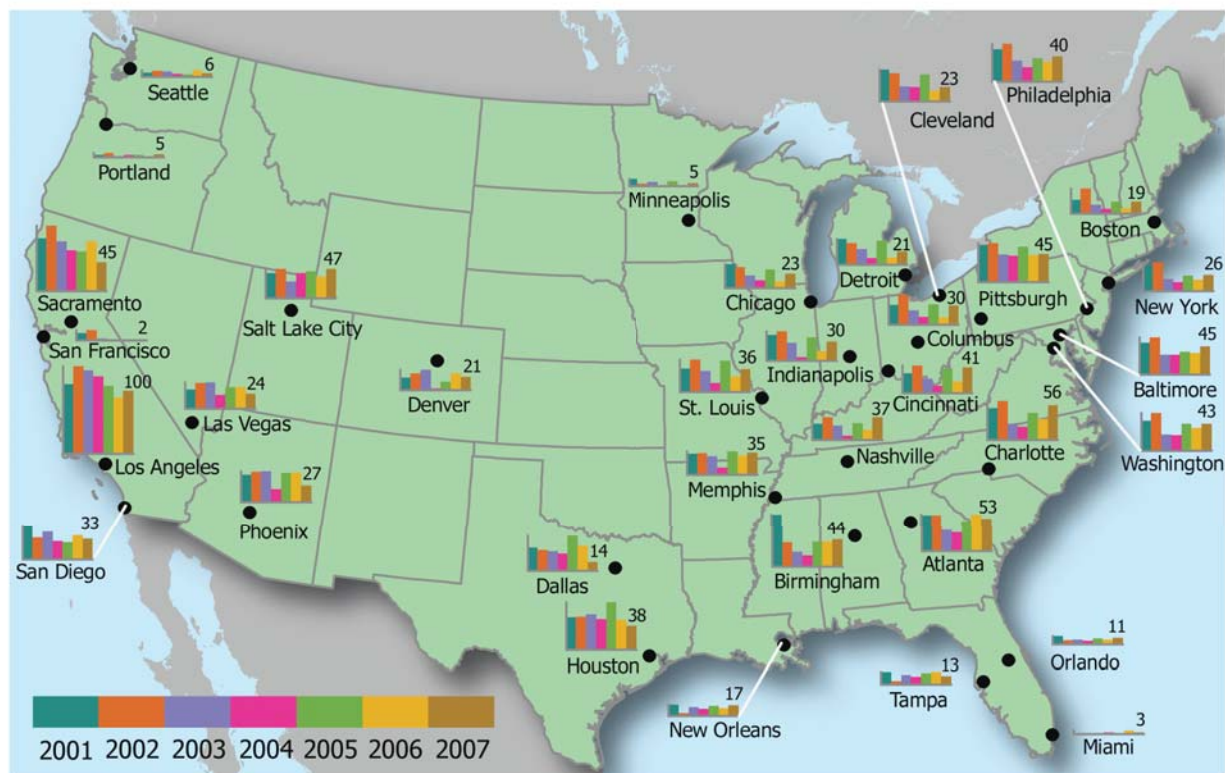
Figure 5 shows the number of unhealthy days that selected metropolitan areas experienced in 2001–2007. Most areas had fewer unhealthy days in 2007 compared to 2001 or 2002. However, Los Angeles, Salt Lake City, and many cities in the east had more unhealthy days in 2007 than in 2006. Nearly all of

EPA’s Air Quality Index (AQI)



Air Quality Index (AQI) Values	Levels of Health Concern
0 to 50	Good
51-100	Moderate
101-150	Unhealthy for Sensitive Groups
151-200	Unhealthy
201-300	Very Unhealthy
301 to 500	Hazardous

the increases in unhealthy days in the east are due to ozone and/or particle pollution. Weather conditions, as well as emissions, contribute to ozone and particle pollution formation.



Review of the National Ambient Air Quality Standards (NAAQS)

The Clean Air Act requires EPA to set two types of NAAQS for the common air pollutants:

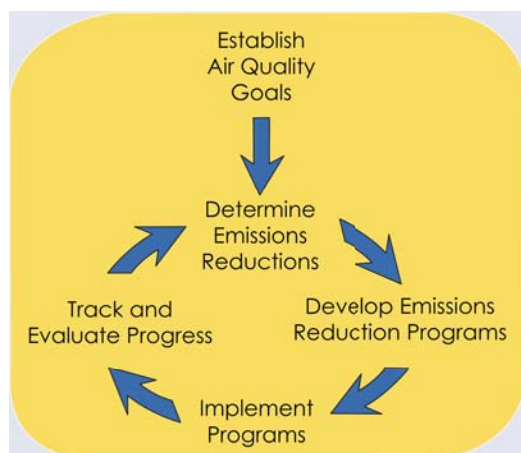
- primary standards to protect public health with an adequate margin of safety, including the health of sensitive populations such as asthmatics, children, and the elderly; and
- secondary standards to protect public welfare from adverse effects, including visibility impairment and effects on the environment (e.g., vegetation, soils, water, and wildlife).

The Clean Air Act requires periodic review of the "standards" and the science upon which they are based. The current standards and the status of each review are shown below.

Pollutant	Primary Standard(s)	Secondary Standard(s)	Status of Review
Ozone	0.075 ppm (8-hour)	Same as Primary	Review completed 2008; the previous 0.08 ppm standard remains in effect
Lead	0.15 $\mu\text{g}/\text{m}^3$ (3-month)	Same as Primary	Review completed 2008; the previous 1.5 $\mu\text{g}/\text{m}^3$ standard remains in effect
NO ₂	0.053 ppm (annual)	Same as Primary	Primary standard review to be completed 2009; secondary standard review of SO ₂ and NO ₂ to be completed 2010
SO ₂	0.03 ppm (annual) 0.14 ppm (24-hour)	0.5 ppm (3-hour)	Primary standard review to be completed 2010; secondary standard review of SO ₂ and NO ₂ to be completed 2010
PM _{2.5}	15 $\mu\text{g}/\text{m}^3$ (annual) 35 $\mu\text{g}/\text{m}^3$ (24-hour)	Same as Primary	To be completed 2011
PM ₁₀	150 $\mu\text{g}/\text{m}^3$ (24-hour)	Same as Primary	
CO	9 ppm (8-hour) 35 ppm (1-hour)	None; no evidence of adverse welfare effects at current ambient levels	To be completed 2011

Units of measure are parts per million (ppm) or micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$). For more information about the standards, visit <http://www.epa.gov/air/criteria.html>.

The Air Quality Management Process



Each time EPA establishes air quality goals necessary to protect public health and the environment, it sets in motion a chain of events. States and local agencies work with EPA to:

- identify emissions reductions needed to achieve air quality goals
- develop emissions reduction programs
- implement emissions reduction strategies and enforcement activities
- track and evaluate progress



AIR QUALITY IN NONATTAINMENT AREAS

Many areas of the country where air pollution levels have exceeded the NAAQS have been designated “nonattainment.” Under the Clean Air Act, EPA and state, tribal, and local air quality planning agencies work together to develop plans to address air pollution in these areas. Each year, EPA tracks air quality progress in areas identified as nonattainment by reviewing changes in measured concentrations with respect to the standards. Figure 6 shows which of these areas are above or below one or more of the standards as of 2007.

Air quality has improved in the areas that were designated nonattainment across all six common

pollutants. All of the areas designated as nonattainment for CO, SO₂, and NO₂ had air quality levels below their respective standards as of December 2007. Only one of the nonattainment areas was above the standard for lead (1.5 µg/m³)—Herculaneum, Mo. For ozone, annual PM_{2.5}, and PM₁₀, a number of areas were above the standards: 51, 32, and 17 areas, respectively. Even though many areas were still above the standard in 2007, there have been improvements in the concentration levels in the nonattainment areas. For example, the ozone areas showed a 9 percent improvement, and the annual PM_{2.5} areas showed a 6 percent improvement between the time of designation and 2007.

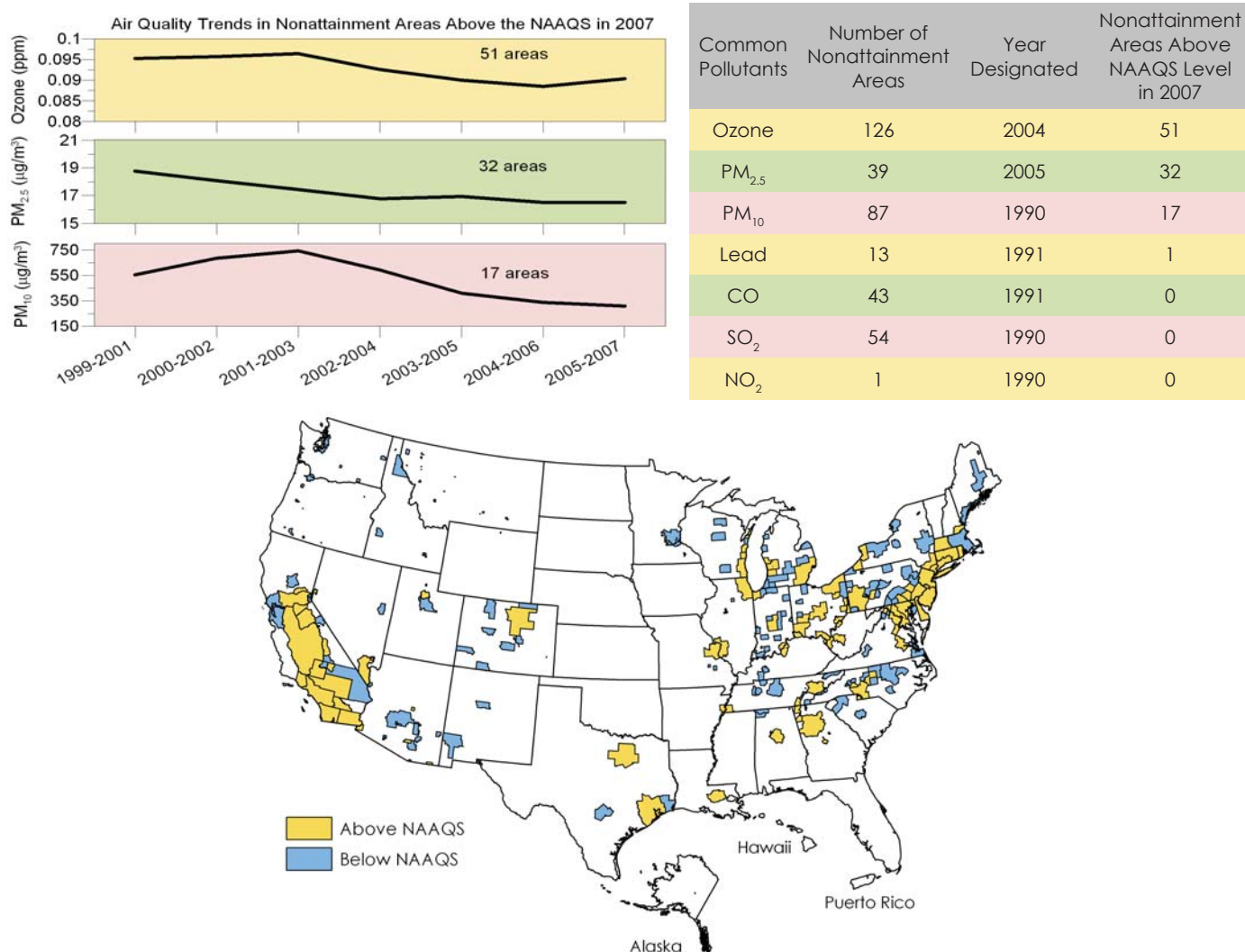


Figure 6. Status of original nonattainment areas for one or more standards (i.e., 8-hour ozone, maximum quarterly lead, annual PM_{2.5}, 24-hour PM₁₀, annual NO₂, 8-hour CO, and annual SO₂) as of 2007.

Notes: Designations for the recently revised standards for ozone (2008), lead (2008), and 24-hour PM_{2.5} (2006) are to be determined. Depending on the form of the standard, a single year or an average of multiple years of data is compared with the level of the standard. For information about air quality standards, visit <http://www.epa.gov/air/criteria.html>. For information about air trends design values, visit <http://www.epa.gov/air/airtrends/values.html>.